



PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of:

Attorney Docket No.: D5270

Donald R. Van Der Moere

Confirmation No.: 3898

Application No.: 10/802,984

Examiner: Ernesto Garcia

Filed: March 17, 2004

Group Art Unit: 3679

For: COATED PISTON PIN

APPEAL BRIEF UNDER 37 C.F.R. § 41.37

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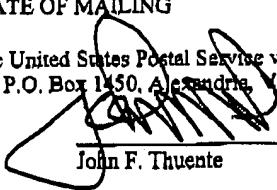
The Appeal Brief is presented in response to the Office Action of July 27, 2006 and in support of the Notice of Appeal filed on September 6, 2006. Appellant respectfully requests reversal of the Examiner's rejections of pending claims 1, 3-8, 10-15, and 17-21.

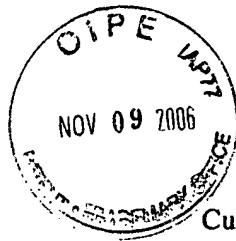
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John F. Thuente



Customer No. 24113
Patterson, Thuente, Skaar & Christensen, P.A.
4800 IDS Center
80 South 8th Street
Minneapolis, Minnesota 55402-2100
Telephone: (612) 349-5740
Facsimile: (612) 349-9266

Attorney Docket No. 1773.67US01

APPEAL BRIEF TRANSMITTAL

In re the application of:

	Donald R. Van Der Moere	Confirmation No.: 3898
Application No.:	10/802,984	Examiner: Ernesto Garcia
Filed:	March 17, 2004	Group Art Unit: 3679
For:	COATED PISTON PIN	

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Transmitted herewith is the Appeal Brief in the above-identified application, with respect to the Notice of Appeal filed on September 6, 2006.

Applicant(s) is/are entitled to small entity status in accordance with 37 CFR 1.27.

A check in the amount of \$500.00 (large entity) \$250.00 (small entity) to cover the filing fee.

Respectfully submitted,

John F. Thuente
Registration No. 29,595

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John F. Thuente

I. REAL PARTY IN INTEREST (37 C.F.R. § 41.37(c)(1)(i)).

The real party in interest of the above-referenced patent application is the assignee, International Engine Intellectual Property Company, LLC, whose parent company is International Truck and Engine Corporation of Warrenville, Illinois.

II. RELATED APPEALS AND INTERFERENCES (37 C.F.R. § 41.37(c)(1)(ii)).

Appellant and appellant's legal representatives know of no other appeals or interferences that may be related to, directly affect or be directly affected by, or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS (37 C.F.R. § 41.37(c)(1)(iii)).

Claims 1, 3-8, 10-15 and 17-21 stand rejected, remain pending, and are the subject of the present Appeal. Claims 2, 9, and 16 have been cancelled.

IV. STATUS OF AMENDMENTS (37 C.F.R. § 41.37(c)(1)(iv)).

No amendments have been made subsequent to the Office Action of July 27, 2006.

V. SUMMARY OF CLAIMED SUBJECT MATTER (37 C.F.R. § 41.37(c)(1)(v)).

The present invention generally relates to a piston pin (10) having a piston pin exterior margin, the exterior margin of the piston pin (10) being coated with a chromium-nitride coating (16). The coating (16) on the exterior margin of the piston pin (10) is shiftably matable with an inside margin of a pin bore (28) of a connecting rod (20) without the employment of an intervening bushing. See, e.g., Application, page 3, line 16 - page 4, line 11, Figs. 4-5.

The present invention further generally relates to a piston pin (10) and a connecting rod (20) combination comprising a piston pin exterior margin, the exterior margin having a coating (16) thereon comprised of chromium-nitride. The coating (16) on the exterior margin of the piston pin (10) is shiftably matable with an inside margin of a pin bore (28) of the connecting rod (20). A mating of the pin bore (28) with the piston pin is a shiftable surface-to-surface engagement without the employment of an intervening bushing. See, e.g., Application, page 3, line 16 - page 4, line 11, Figs. 4-5.

The present invention also generally relates to a method of forming a piston pin (10). The method includes forming a piston pin body (12) having an exterior margin, coating the exterior margin with a chromium-nitride material (16), forming the surface margin of a connecting rod (20) of a certain material, including the surface of a pin bore (28), and mating the coating (16) of the piston pin (10) with the surface of the pin bore (28) in a shiftable inside surface-to-surface engagement without the employment of an intervening bushing. See, e.g., Application, page 3, line 16 - page 4, line 11, Figs. 4-5.

To aid in the Board's consideration of the present Appeal, claims 1, 8, and 15 are set forth in the left-hand column of the following chart. Selected portions of the specification are set forth in the right-hand column.

Claim	Specification
<p>1. A piston pin, comprising:</p> <p>a piston pin exterior margin, the exterior margin being coated with a chromium-nitride coating,</p> <p>the coating being shiftably matable with an inside margin of a pin bore of a connecting rod without the employment of an</p>	<p>"The piston pin 10 has a generally tubular body 12." <u>Id.</u> at p. 3, ln. 18. "A coating 16 is applied to the external margin to the tubular body 12." <u>Id.</u> at p. 3, ln. 20. "The coating 16 is preferably chromium nitride (Cr-N)." <u>Id.</u> at p. 4, ln. 3.</p> <p>"The small end 26 [of connecting rod 20] has a pin bore 28 defined therethrough . . . Notably, the interior margin of the pin bore 28 does not include a bushing . . ." <u>Id.</u> at p. 3, ll. 26-27. "Accordingly, the inside diameter of the pin bore 28 is in direct surface to surface contact with the</p>

Claim	Specification
intervening bushing.	coating 16 of the piston pin 10 when the piston pin 10 is inserted into the pin bore 28 of the connecting rod 20 without the interposition of a bearing." <u>Id.</u> at p. 3, ln. 30 - p. 4, ln. 2.
8. A piston pin and a connecting rod combination comprising: a piston pin exterior margin, the exterior margin having a coating being comprised of chromium-nitride,	"The piston pin and connecting rod of the present invention are shown generally at 10 and 20 respectively . . . <u>Id.</u> at p. 3, ll. 16-17. "The piston pin 10 has a generally tubular body 12." <u>Id.</u> at p. 3, ln. 18. "A coating 16 is applied to the external margin to the tubular body 12." <u>Id.</u> at p. 3, ln. 20. "The coating 16 is preferably chromium nitride (Cr-N)." <u>Id.</u> at p. 4, ln. 3.
the coating being shiftably mating with an inside margin of a pin bore of the connecting rod, a mating of the pin bore with the piston pin being a shiftable surface to surface engagement without the employment of an intervening bushing.	"The small end 26 [of connecting rod 20] has a pin bore 28 defined therethrough . . . Notably, the interior margin of the pin bore 28 does not include a bushing . . ." <u>Id.</u> at p. 3, ll. 26-27. "Accordingly, the inside diameter of the pin bore 28 is in direct surface to surface contact with the coating 16 of the piston pin 10 when the piston pin 10 is inserted into the pin bore 28 of the connecting rod 20 without the interposition of a bearing." <u>Id.</u> at p. 3, ln. 30 - p. 4, ln. 2.
15. A method of forming a piston pin, comprising: forming a piston pin body having an exterior margin; coating the exterior margin with a chromium-nitride material; forming the surface margin of a connecting rod of a certain material, including the surface of a pin bore; and mating the coating of the piston pin with the surface of the pin bore in a shiftable inside surface to surface engagement without the employment of an intervening bushing.	"The piston pin and connecting rod of the present invention are shown generally at 10 and 20 respectively . . . <u>Id.</u> at p. 3, ll. 16-17. "The piston pin 10 has a generally tubular body 12." <u>Id.</u> at p. 3, ln. 18. "A coating 16 is applied to the external margin to the tubular body 12." <u>Id.</u> at p. 3, ln. 20. "The coating 16 is preferably chromium nitride (Cr-N)." <u>Id.</u> at p. 4, ln. 3. "The small end 26 [of connecting rod 20] has a pin bore 28 defined therethrough . . . Notably, the interior margin of the pin bore 28 does not include a bushing . . ." <u>Id.</u> at p. 3, ll. 26-27. "Accordingly, the inside diameter of the pin bore 28 is in direct surface to surface contact with the coating 16 of the piston pin 10 when the piston pin 10 is inserted into the pin bore 28 of the connecting rod 20 without the interposition of a bearing." <u>Id.</u> at p. 3, ln. 30 - p. 4, ln. 2.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL (37 C.F.R. § 41.37(c)(1)(vi)).

1. Rejection of claims 8 and 10-14 under 35 U.S.C. 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which Appellants regard as the invention.

2. Rejection of claims 1, 2, 4, 6, and 7 are under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,851,659 to Komuro et al. ("Komuro").

3. Rejection of claims 5 under 35 U.S.C. 103(b) as being obvious over Komuro.

4. Rejection of claims 8, 10, and 15 under 35 U.S.C. 103(b) as being obvious over U.S. Patent No. 1,491,155 to McKone ("McKone") in view of U.S. Patent No. 4,406,558 to Kochendorfer et al. ("Kochendorfer").

5. Rejection of claims 10-12 and 17-19 under 35 U.S.C. 103(b) as being obvious over McKone in view of Kochendorfer and further in view of Komuro.

6. Rejection of claims 13 and 20 under 35 U.S.C. 103(b) as being obvious over McKone in view of Kochendorfer and Komuro and further in view of U.S. Patent No. 5,601,293 to Fukutome et al. ("Fukutome").

7. Rejection of claims 14 and 21 under 35 U.S.C. 103(b) as being obvious over McKone in view of Kochendorfer, Komuro, and Fukutome, and further in view of U.S. Patent No. 3,757,378 to Wakefield ("Wakefield").

VII. ARGUMENT (37 C.F.R. § 41.37(c)(1)(vii)).

A. FIRST GROUND OF REJECTION - CLAIMS 8 AND 10-14

The examiner rejected claims 8 and 10-14 as being indefinite for failing to particularly point out and distinctly claim the subject matter which Appellants regard as the invention.

Specifically, with respect to claim 8, the Examiner indicated, "[I]t is unclear whether both the piston pin and the connecting rod comprise each a piston pin exterior margin." For the following reasons, claim 8 and claims 10-14 depending therefrom are not indefinite and do point out and distinctly claim the subject matter which Appellants regard as the invention. Accordingly, Appellants respectfully request reversal of the rejection.

The requirement to 'distinctly' claim means that the claim must have a meaning discernible to one of ordinary skill in the art. Metabolite Labs., Inc. v. Lab. Corp. of Am. Holdings, 370 F.3d 1354, 1366, (Fed. Cir. 2004). "Only when a claim remains insolubly ambiguous without a discernible meaning after all reasonable attempts at construction must a court declare it indefinite." Id. "Some latitude in the manner of expression and the aptness of terms should be permitted even though the claim language is not as precise as the examiner might desire." MPEP 2173.02.

The claim term "piston pin exterior margin" is clear. While the preamble includes combination of a piston pin and a connecting rod, the interplay between the coating on the piston pin exterior margin and the pin bore of the connecting rod is clear based on the totality of the claim and the interaction of the claim limitations with each other. See MPEP 2173.02 citing In re Larsen No. 01-1092 (Fed. Cir. May 9, 2001) (unpublished) (court observed that **the totality of all the limitations of the claim and their interaction with each other must be considered** to ascertain the inventor's contribution to the art) emphasis added. In the present application, one of ordinary skill in the art would understand the term "piston pin exterior margin" to mean the exterior margin of the piston pin by the inclusion of the term "piston pin" in front of "exterior margin." One of ordinary skill in the art would not understand the term to mean that a

connecting rod includes a "connecting rod" piston pin exterior margin. Thus, the claims are clear and have a meaning discernible to one of ordinary skill in the art.

Accordingly, because the scope of claims 8 and 10-14 is clear, such that the public is informed of the boundaries of what constitutes patent infringement, the claims are not indefinite under 35 U.S.C. § 112, second paragraph. Appellants respectfully request reversal of the rejection under 35 U.S.C. § 112, second paragraph.

B. SECOND GROUND OF REJECTION - CLAIMS 1, 3, 4, 6, AND 7

The Examiner rejected claims 1, 3, 4, 6, and 7 under 35 U.S.C. § 102(b) as being unpatentable over Komuro. For the following reasons, Komuro does not prima facie anticipate Appellants' claimed invention. Appellants respectfully request reversal of the rejection.

Komuro does not anticipate independent claim 1 or the claims dependent thereon, as the reference does not teach or suggest each and every element as set forth in the claims. See MPEP § 2131 citing Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987) ("A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.")

First, Komuro does not teach or suggest a piston pin, as included in the claims. The test roller 11 of Komuro is merely a test piece used in an abrasion test. See col. 7, lines 4-6 and 45-50. A test roller is simply not a piston pin as noted in claim 1. Further, no one skilled in the art would consider the test roller 11 to be a piston pin, e.g., such as by the inclusion of the raised center portion 13 of the test piece 11 of Fig. 3 of Komura.

Furthermore, Komuro does not teach or suggest the exterior margin of a piston pin being coated with a chromium-nitride coating. During examination, the Examiner has construed the claim to include the limitation that the coating to cover the "entire exterior margin" of the piston

pin. See Final Office Action of March 22, 2006, p. 3 ("According to the drawings, the entire exterior margin is coated with chromium nitride. Further, the specification, in particular paragraph 019, originally indicated that the exterior margin is the coated chromium-nitride.") In reliance on this construction, Appellants amended the claims to remove the language "at least a portion of" from in front of "the exterior margin." Accordingly, the claims must be so construed consistently with the Examiner's construction when being evaluated for patentability in view of Komuro. Importantly, in Komuro, the entire exterior of the test piece is not coated. Rather, only the test piece 13 of the test roller 11 has a treated surface, as noted at col. 7, lines 49-50.

Therefore, because Komuro does not teach all of the features of claim 1, the reference does not anticipate Appellants' claimed invention. Appellants do not comment further on claims 3, 4, 6, and 7 depending from claim 1, although Appellants do not acquiesce in the Examiner's assertions regarding these claims. Appellants respectfully request reversal of the rejection of claims 1, 3, 4, 6, and 7 as being anticipated by Komuro.

C. THIRD GROUND OF REJECTION - CLAIM 5

The Examiner rejected claim 5 under 35 U.S.C. § 103(a) as being unpatentable over Komuro. For the reasons discussed below, claim 5 is not prima facie obvious over Komuro. Accordingly, Appellants respectfully request reversal of the rejection.

A prima facie case of obviousness of Appellants' claimed invention has not been established, as the cited reference does not teach, suggest, or motivate all of the features included in claim 5. Prima facie obviousness is not established if all the elements of the rejected claim are not disclosed or suggested in the cited art. In re Ochiai, 37 USPQ 1127, 1131 (Fed. Cir. 1995). ("The test for obviousness *vel non* is statutory. It requires that one compare the claim's 'subject matter as a whole' with the prior art 'to which said subject matter pertains.'"). See also, MPEP

2143.03 "All Claim Limitations Must Be Taught or Suggested," citing In re Royka, 180 USPQ 580 (CCPA 1974). "To establish prima facie obviousness of a claimed invention, all of the claim limitations must be taught or suggested by the prior art." MPEP 2143.03.

As discussed above, Komuro does not teach or suggest a piston pin. Komuro also does not teach or suggest the entire exterior margin of a pin being coated with a chromium-nitride coating. Thus, a prima facie of obviousness has not been established. As such, Appellants respectfully request reversal of the rejection of claim 5 as being obvious over Komuro.

D. FOURTH GROUND OF REJECTION - CLAIMS 8, 10, AND 15

The Examiner rejected claims 8, 10, and 15 under 35 U.S.C. § 103(a) as being unpatentable over McKone in view of Kochendorfer. For the reasons discussed below, claims 8, 10, and 15 are not prima facie obvious over McKone and Kochendorfer. Accordingly, Appellants respectfully request reversal of the rejection.

The Examiner has failed to establish a prima facie case of obviousness of Appellants' claimed invention, as the Examiner has not pointed to any motivation or suggestion to make the claimed invention in light of the prior art teachings. Specifically, the Examiner has failed to point to any motivation or suggestion in the references to coat a piston pin with a chromium-nitride coating. Rather, the Examiner merely points to Kochendorfer for its teaching of applying a bearing layer composed of a hard nitride, boride, and/or silicide of the metals in the genus of the third to sixth group of the periodic table.

"To establish a prima facie case of obviousness in a genus-species situation, as in any other 35 U.S.C. 103 case, it is essential that the Examiner find some motivation or suggestion to make the claimed invention in light of the prior art teachings." MPEP 2144.08 citing In re Brouwer, 77 F.3d 422, 425 (Fed. Cir. 1996). "[A] determination must be made whether one of

ordinary skill in the relevant art would have been motivated to make the claimed invention as a whole, i.e., to select the claimed species or subgenus from the disclosed prior art genus." Id. citing In re Ochiai, 71 F.3d at 1569-70. This includes consideration of the size of the genus, the express teachings of the reference, the teachings of structural similarity, the properties and utilities of any structurally similar prior art species or subgenus, the predictability of the technology, and any other teaching to support the selection of the species or subgenus. Id.

The genus taught by Kochendorfer includes numerous elemental metals, each of which has unique properties and utilities. While Kochendorfer teaches the genus of "the metals in the third to sixth group of the periodic table," it does not teach any species or any structural similarities of species or subgenus within the genus. Accordingly, because Kochendorfer does not disclose any species in the genus or any properties and utilities of any structurally similar prior art species or subgenus, it would not have been obvious to select chromium-nitride as the disclosed "nitride, boride, and/or silicide."

Therefore, because it would not have been obvious to coat the exterior margin of a piston pin with a chromium-nitride coating based on the teachings of McKone in view of Kochendorfer, a prima facie of obviousness has not been established. As such, Appellants respectfully request reversal of the rejection of claim 8, 10, and 15 as being obvious over McKone in view of Kochendorfer.

E. FIFTH GROUND OF REJECTION - CLAIMS 10-12 AND 17-19

The Examiner rejected claims 10-12 and 17-19 under 35 U.S.C. § 103(a) as being unpatentable over McKone in view of Kochendorfer and Komuro. For the reasons discussed below, claims 10-12 and 17-19 are not prima facie obvious over the cited references. Accordingly, Appellants respectfully request reversal of the rejection.

As noted above, to establish a prima facie case of obviousness, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. The Examiner has failed to establish such a prima facie case with respect to claims 10-12 and 17-19, as the Examiner has not pointed to any suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine reference teachings. Specifically, the Examiner has failed to point to any suggestion or motivation to coat the wrist or gudgeon pins of McKone or Kochendorfer with the chromium-nitride coating taught by Komuro.

Therefore, a prima facie of obviousness has not been established and Appellants respectfully request reversal of the rejection of claims 10-12 and 17-19 as being obvious over McKone in view of Kochendorfer and Komuro.

F. SIXTH GROUND OF REJECTION - CLAIMS 13 AND 20

The Examiner rejected claims 13 and 20 under 35 U.S.C. § 103(a) as being unpatentable over McKone in view of Kochendorfer, Komuro, and Fukutome. For the reasons discussed below, claims 13 and 20 are not prima facie obvious over the cited references. Accordingly, Appellants respectfully request reversal of the rejection.

As discussed above, the Examiner has failed to establish a prima facie case of obviousness of Appellants' claimed invention, as the Examiner has not pointed to any motivation or suggestion to combine the teachings of the cited references. The Examiner has failed to point to any motivation or suggestion to combine the teachings of Komuro with McKone, Kochendorfer, and further Fukotome. Specifically, the Examiner has failed to point to any

suggestion or motivation to coat the wrist or gudgeon pins of McKone or Kochendorfer with the chromium-nitride coating taught by Komuro.

Therefore, because the Examiner has failed to provide any teaching or suggestion to combine the references, a prima facie of obviousness has not been established. As such, Appellants respectfully request reversal of the rejection of claims 13 and 20 as being obvious over McKone in view of Kochendorfer, Komuro, and Fukutome.

G. SEVENTH GROUND OF REJECTION - CLAIMS 14 AND 21

The Examiner rejected claims 14 and 21 under 35 U.S.C. § 103(a) as being unpatentable over McKone in view of Kochendorfer, Komuro, Fukutome, and Wakefield. For the reasons discussed below, claims 14 and 21 are not prima facie obvious over the cited references. Accordingly, Appellants respectfully request reversal of the rejection.

Similarly to as discussed above, the Examiner has failed to establish a prima facie case of obviousness of Appellants' claimed invention, as the Examiner has not pointed to any motivation or suggestion to combine the teachings of the cited references. The Examiner has failed to point to any motivation or suggestion to combine the teachings of Komuro with Kochendorfer, McKone, Fukutome, and Wakefield. Specifically, the Examiner has failed to point to any suggestion or motivation to coat the wrist or gudgeon pins of McKone or Kochendorfer with the chromium-nitride coating taught by Komuro

Therefore, because the Examiner has failed to provide any teaching or suggestion to combine the references, a prima facie of obviousness has not been established. As such, Appellants respectfully request reversal of the rejection of claims 13 and 20 as being obvious over McKone in view of Kochendorfer, Komuro, Fukutome, and Wakefield.

VIII. CLAIMS APPENDIX (37 C.F.R. § 41.37(c)(1)(viii)).

1. A piston pin, comprising:

a piston pin exterior margin, the exterior margin being coated with a chromium-nitride coating, the coating being shiftably matable with an inside margin of a pin bore of a connecting rod without the employment of an intervening bushing.

3. The piston pin of claim 1, the chromium-nitride coating being deposited by physical vapor deposition.

4. The piston pin of claim 1, the chromium-nitride coating being deposited to a depth of between 1 and 10 microns.

5. The piston pin of claim 4, the chromium-nitride coating being deposited to a depth of substantially 5 microns.

6. The piston pin of claim 1, the chromium-nitride coating being buffed after deposition.

7. The piston pin of claim 6, the chromium-nitride coating being buffed in a centerless buffing operation.

8. A piston pin and a connecting rod combination comprising:

a piston pin exterior margin, the exterior margin having a coating being comprised of chromium-nitride, the coating being shiftably matable with an inside margin of a

pin bore of the connecting rod, a mating of the pin bore with the piston pin being a shiftable surface to surface engagement without the employment of an intervening bushing.

10. The piston pin, connecting rod combination of claim 8, the chromium-nitride coating being deposited by physical vapor deposition.

11. The piston pin, connecting rod combination of claim 8, the chromium-nitride coating being deposited to a depth of between 1 and 10 microns.

12. The piston pin, connecting rod combination of claim 11, the chromium-nitride coating being deposited to a depth of substantially 5 microns.

13. The piston pin, connecting rod combination of claim 8, the chromium-nitride coating being buffed after deposition.

14. The piston pin, connecting rod combination of claim 13, the chromium-nitride coating being buffed in a centerless buffing operation.

15. A method of forming a piston pin, comprising:
forming a piston pin body having an exterior margin;
coating the exterior margin with a chromium-nitride material;

forming the surface margin of a connecting rod of a certain material, including the surface of a pin bore; and

mating the coating of the piston pin with the surface of the pin bore in a shiftable inside surface to surface engagement without the employment of an intervening bushing.

17. The method of claim 15 including depositing the chromium-nitride coating by physical vapor deposition.

18. The method of claim 15 including depositing the chromium-nitride coating to a depth of between 1 and 10 microns.

19. The method of claim 15, including depositing the chromium-nitride coating to a depth of substantially 5 microns.

20. The method of claim 15 including buffering the chromium-nitride coating after deposition prior to mating the exterior margin of piston pin with the inside margin of the pin.

21. The method of claim 20, including buffering the chromium-nitride coating in a centerless buffering operation.

IX. EVIDENCE APPENDIX (37 C.F.R. § 41.37(c)(1)(ix)).

None.

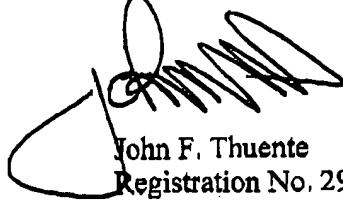
X. RELATED PROCEEDINGS APPENDIX (37 C.F.R. § 41.37(c)(1)(x)).

None.

XI. CONCLUSION.

Claims 1, 3-8, 10-15, and 17-21 are patentable over the references of record. Appellants assert that the Examiner has failed to establish prima facie unpatentability of any of the claims. Thus, Appellant respectfully requests the reversal of the rejections of claims 1, 3-8, 10-15, and 17-21 and the allowance of all pending claims.

Respectfully submitted,



John F. Thuente
Registration No. 29,595

Customer No. 24113
Patterson, Thuente, Skaar & Christensen, P.A.
4800 IDS Center
80 South 8th Street
Minneapolis, Minnesota 55402-2100
Telephone: (612) 349-5747